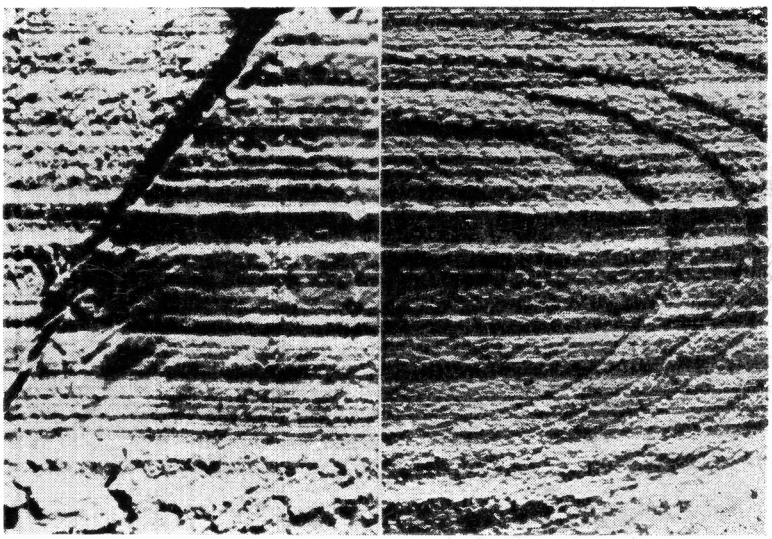
THE TECHNICIAN IN THE POLICE LABORATORY



EVIDENCE TEST

VOL. 1—NO. 5 SEPTEMBER, 1943

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This month's cover photograph accompanies the article on "THE LOWER MURDER CASE" presented in this issue. The illustration shows the match which was obtained in a comparison of tool marks made with an axe, on evidence and test specimens in the case.

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The inside cover photograph accompanies the comment on the "IDENTIFICATION OF A PAPER CUTTING BLADE". A more complete description of the illustration will be found in that article.

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THE TECHNICIAN

Vol. 1, No. 5 - September 1943

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THE IDENTIFICATION OF A PAPER-CUTTING BLADE

By John E. Davis

Technician with the Laboratory of the
Missouri State Highway Patrol

It is a well known fact, among scientific criminal investigators, that the cutting edges of tools, such as knives, hatchets, etc. may be identified on the basis of minute imperfections in the blade. Microscopic nicks are produced not only in sharpening tools of that nature, but also in the process of using them.

The actual identification of marks of this type is one of the most interesting of the physical comparisons which a technician may be called upon to make. Although frequently a long and tedious procedure, the satisfaction obtained in making a positive identification is generally well worth the effort expended. Pry-bar marks on wood or metal, the marks of a plane or draw-knife on wood specimens, knife-cuts on twigs and branches, the marks on a limb or branch made with an axe--all these and many more may be presented to the analyst.

In the mechanical-tool class, those in the wood-working field, such as mechanical shapers, planers, etc., might be brought to our mind first. Identification, of the type made on the ladder in the Lindberg case, by Arthur Koehler, illustrate what may be done with evidence of this kind.

In the cutting of paper, commerically, large machines are used, which have a long hollow ground blade to do the cutting. This blade is affixed in a vertical position, with the cutting-edge arranged parallel to the platform below. Paper is placed on the platform, a lever is thrown, a clamp and the cutting blade simultaneously descend, and the paper is automatically held fast

and cut at the same time. This cutting blade, rather than coming straight down, moves in a line at an angle to the platform. In other words, although the edge of the blade is constantly parallel to the platform, it moves from right to left in its downward path, so that any one point on the blade actually passes through a line running at approximately 45 degrees to the plane of the platform.

Blades of this type, just as any other, have microscopic imperfections in their cutting edges. After considerable use, the blade may become quite badly nicked and leave large ridges on the edges of any paper cut with the machine.

We in this laboratory have never had occasion to make an identification of paper on the basis of marks so produced, nor have we noted any mention in the literature reviewed of such an identification--either in reference to an actual case, or from the experimental standpoint.

Yet at the same time, anyone who has ever even so much as casually observed the "smooth" edge of a new book, scratch-pad or tablet, ream of paper, etc., could hardly help but be struck by the characteristic formation of lines on those edges. These have been produced by the cutting blade previously described.

It would seem that there would be instances in which an identification on this basis, might be made, and of significance. For example, if it should happen that a printer was distributing subversive propaganda, or publishing other material in violation of the law or if an apparently reputable print-shop were illicitly engaged in the production of counterfeit paper currency; or if otherwise connected with an illegal operation which involved paper cutting in this manner, and in which a large number of simultaneously cut sheets, still in their original positions (with respect to each other) might fall into the hands of the investigator, it is probable that a comparison with paper known to have been cut with a cer-

tain machine would lead to a positive identification.

The author has on numerous occasions compared the lines on the edges of small scratch pads from the Department's Stationery Locker, and found it a simple matter to match the lines on a number of them over a period of time. Under the circumstances, it was not possible to ascertain whether all were originally cut at one time, or whether they were from separate cuttings on the same machine.

With THE TECHNICIAN, we have a similar set of circumstances, but one which permits comparison over a period of time. The paper for this publication is cut from large reams of mimeograph stock. It is then run through the duplicating machine, the cover put on and stapled, and the resulting booklets taken over to the print shop. Here they are stacked in groups of ten, placed on the platform, and trimmed. The blade on the machine used is about three feet long, and would permit placing at least three stacks of the booklets beneath the blade at a time. However, this generally causes the books to tear slightly at the corners inasmuch as the blade moves at an angle, is not overly sharp, and the books have no side support when so placed. Therefore, all are cut on the extreme left end of the blade, where they are supported by a side plate. Accordingly, one would expect to be able to match up the lines on every issue cut. (All copies of the first issue were not so trimmed. Some were placed on the right, and center sections of the blade.)

Just as a matter of interest, and for use as an illustration, three copies of THE TECHNICIAN were selected at random from our files. One from each month's supply. At the time of performing the comparison, only three issues had been prepared. The lines were matched up, in the manner described, and photographed for illustratory purposes.

The photograph is reproduced on the inside front

cover of this issue. The illustration shows only a short section of the total matching lines. Three issues-May, June, and July, are shown. The photograph was produced on the Leitz Panphot, with a 10 cm. "Milar" lens. Oblique lighting used. The identity is obvious.

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ED. NOTE: While examinations of this type may seem of little practical value, and of "purely academic" interest, it should be remembered that it is just such experiments and considerations as this which lead to the advancement of accepted testing methods and the solution of criminal cases.

Undoubtedly some of our readers have performed similar experiments. Perhaps actual cases, in which such an identification was made, have come to the attention of others. A report on any such work done would be of definite interest, regardless of its apparent immediate "practical" value.

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FURTHER TESTS ON THE EFFECT OF RUST ON FIREARMS IDENTIFICATION

By Ray B. Jenkins

Firearms Examiner with the Laboratory of the
Missouri State Highway Patrol

On pages 17 to 22, Vol. 1, No. 3 of THE TECHNICIAN, there was presented the first in a series of observations made in regard to the identification of bullets fired from rusted guns. In that article, the writer described an experiment in which a series of fifteen test shots were fired from a badly rusted revolver, and in which the effect of cleaning, and of the passage of bullets through the bore of such an arm was noted.

The present article is intended to supplement the first, and is concerned primarily with the comparison of bullets fired from a gun in good condition, with test shots fired later, after artificial rusting and corrosion had been induced.

Readers of THE TECHNICIAN will recall from the data presented previously, that test shots were all fired from a gun which was already badly rusted at the time it was received in the laboratory, and from which there were available no previously fired bullets. The observations in that particular instance indicated that had such a gun been used in the firing of a fatal bullet, that (presuming only one evidence bullet to have been fired or found) an identification could not have been effected; and that if two or three evidence bullets had been originally fired, the possibility of effecting an identification would have been fairly high, merely from an examination of the bullets themselves. Inasmuch as cartridge cases would not generally be left at the scene of an offence in which a revolver was used, the data on the bullet identi-

fication possibilities was of primary importance.

In this second series of observations, five test shots were fired consecutively, from a "Manuel Escodin" (Eibar, Spain, 1924) Revolver. Artificial rusting and corrosion were then induced in the gun, and three more five-shot series, fired for comparison purposes. Between each of the last three groups the bore of the arm was thoroughly cleaned with solvent and brush.

While the amount of rusting which was induced in this arm was in no way comparable to that which had obtained in the previously discussed weapon, it did simulate the condition of one which would have been exposed to the weather for some little time. The rusting process had extended over a period of about 5 weeks.

As in the previous experiments, all cartridges were marked with a scratch, before firing, and placed consecutively and in like positions in a single chamber of the gun.

Results of the comparisons made are presented below in tabular form. Bullets number 1 through 5 were test shots fired BEFORE rusting of the gun. Bullets number 6 through 20 were fired AFTER the rusting process had been completed. Those identifications marked with an asterisk (*) are of such quality as would permit an absolutely positive statement to be made as regards the identity between the two bullets compared. The identifications marked "good" are ones which, in an actual case in which the true relationship between the projectiles was not known, would call for more careful interpretation on the part of the examiner, and in which the conclusion drawn would depend largely upon his experience and ability. The designation of the qualities of the matches obtained is more relative than absolute.

On the following page, is presented a listing of the bullets compared and the character of the match obtained.

TABLE ONE

BULLET NUMBER	RESULTS
1 - 2	Excellent *
2 - 3	Excellent *
3 - 4	Excellent *
4 - 5	Excellent *
5 - 6	Poor
6 - 7	Good
7 - 8	Excellent *
8 - 9	Fair
9 - 10	Poor
10 - 11	Poor
11 - 12	Good
12 - 13	Good
13 - 14	Excellent *
14 - 15	Excellent *
15 - 16	Fair
16 - 17	Excellent *
17 - 18	Good
18 - 19	Excellent *
19 - 20	Good

* * *

1 - 5	Fair
1 - 6	Fair
1 - 10	Poor
1 - 11	Fair
1 - 15	Fair
1 - 16	Fair
1 - 20	Fair
5 - 10	Poor
5 - 11	Fair
5 - 15	Poor
5 - 16	Fair
5 - 20	Good
10 - 15	Good
10 - 16	Fair

TABLE ONE

BULLET NUMBER	RESULTS
10 - 20	Fair
15 - 20	Good

* * *

Examination was also made of the cartridge cases. The quality of these comparisons are presented below:

TABLE TWO

SHELL NUMBER	RESULTS
1 - 2	Good
2 - 3	Good
3 - 4	Excellent *
4 - 5	Excellent *
(NOTE: All of the above shells have very good firing pin markings and breech face markings.)	
5 - 6	Fair - on firing pin markings. Considerable rust was present on the head of the shell and markings were few, indicating that the rust had somewhat of a cushioning effect on the recoil of the cartridge.
6 - 7	Fair - still some rust adhering to the shell head.
7 - 8	Poor
8 - 9	Poor
9 - 10	Good - rust spots still showing on head. Some breech markings show.

TABLE TWO

SHELL NUMBER	RESULTS
10 - 11	Good - on firing pin. Breech markings sharp on #11.
11 - 12	Excellent *
12 - 13	Excellent *
13 - 14	Excellent *
14 - 15	Good
15 - 16	Excellent *
16 - 17	Excellent *
17 - 18	Excellent *
18 - 19	Excellent *
19 - 20	Excellent *

* * *

1 - 5	Excellent *
1 - 6	Poor - few breech markings. Firing pins similar.
1 - 10	Fair
1 - 11	Fair
1 - 15	Good to Excellent *
1 - 16	Excellent *
1 - 20	Excellent *
5 - 10	Good
5 - 11	Excellent *
5 - 15	Excellent *
5 - 16	Excellent *
5 - 20	Excellent *
10 - 15	Fair
10 - 16	Fair to Poor
10 - 20	Poor
15 - 20	Good

* * *

Results of these comparisons would seem to indicate that the formation of rust on the breech facing would

produce a film of rust that, for the first few shots, would act as a cushion and would not allow the markings on the breech facing (that had not been destroyed by rust) to be imprinted on the shell head. After this film of rust is jarred loose by the shots fired, or removed by cleaning, the original markings which remain will readily be imprinted in the normal manner.

From a comparison of the results of these examinations, it would appear that the firearms examiner would have a slightly better chance of effecting an identification from a comparison of empty cases than from the markings on the bullets. However, that possibility is indicated only on the basis of this one experiment, and would have to be substantiated by further tests before a more definite conclusion could be drawn.

While it is not possible, in experimental work, to duplicate all of the many conditions which may be encountered in actual case-work, it is hoped that the presentation of data such as the above will at least serve to indicate something of the possibilities in regard to the making of certain types of identifications in actual cases.

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THE LOWER MURDER CASE

By John E. Davis

Technician with the Laboratory of the
Missouri State Highway Patrol

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ED. NOTE: Generally speaking, the most interesting manner of presenting material in the Police Science Field, as it is in the fields of medicine, psychology, etc., is by a reference to actual cases. Evidence of this may be seen in the greater popularity of texts in which case references abound; of the "True" Detective Magazines, etc.

Thus far, in THE TECHNICIAN, there have appeared practically no actual references to cases. It is hoped that, in the future issues, more such illustrative articles will appear, for even though they may show no particularly outstanding work from the laboratory standpoint, the presentation of the work which was done, in its relation to the case as such, may have as great an interest value as a more outstanding identification, or procedure, presented abstractly.

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The City of Sedalia, Missouri, located about half way between Kansas City and Jefferson City, served as the locale for a brutal murder, in March of 1942. Sedalia, like most Missouri towns, is the center of a farming community. Among the surrounding farms was one known as the HALEY PLACE, on which lived one WILLIS HALEY, his wife, SARAH, and his MOTHER. A sister to Willis Haley, LILLIE LOWER, a widow, for the past several years, lived on a

neighboring farm, close enough to the Haley place to permit her visiting there frequently.

WILLIS HALEY, a little over 50 years of age, was of unsound mind, and as a matter of fact had once been committed to an institution for the mentally afflicted as a result of his having been tried for the murder in 1929 of one CHARLES WARD. He had been released, however, and had since resided at the Haley farm with his wife and mother.

On Friday, March __, MRS. RICHARD LOWER, sister-in-law to LILLIE LOWER, had attempted several times to contact MRS. LILLIE LOWER, by telephone. A failure to obtain a reply excited her suspicions that something might be wrong, whereupon she notified friends, who informed the Sheriff of the circumstances.

SHERIFF ROSS BOTHWELL, of Pettis County, upon investigating, found that the Lower home was deserted, and decided to seek information from the Haley farm. There, he was informed by the mother of Willis Haley, that Lillie Lower had been there on Wednesday, and that Willis and Lillie had had an argument as to who should take care of the mother (who had been ill and bedfast for some months) and that as a result of the argument Willis Haley flew into a mad rage, knocked his sister down, and stomped her with his heavy boots. He had then dragged her out of the house and toward the creek.

The State Highway Patrol was informed of the facts surrounding the disappearance of Mrs. Lower, a posse was formed, and a search begun. In the meantime, Willis Haley was taken into custody (he had not left the farm) but denied having harmed his sister, claiming he had gone out to chop wood, and that when he had returned she was gone.

Following an extensive search of the building, creek, and farm land, the body was discovered in a pile of brush in the woods about 300 feet from the house. A sort of pathway indicated that the body had been dragged

from the house, and then concealed with leaves and branches.

The body was badly mutilated. The head and face particularly appeared to have been struck repeatedly with some heavy, blunt instrument.

WILLIS HALEY was considered the most likely suspect.

On March 17, the following specimens were received by the laboratory in Jefferson City:

(1) Pair of rubber boots taken from the suspect. To be checked for fibers and blood.
(2) Piece of linoleum from floor of suspects house. (check for blood)
(3) Sample of material (blood--?) taken from rim of a stoneware crock.
(4) Specimen of hair, found at home of suspect.
(5) Hair specimens from body of LILLIE LOWER, and from SARAH HALEY, wife of the suspect.
(6) Double-bitted axe marked "X" to check for blood, and tool mark comparison.
(7) Double-bitted axe marked "X" to check for blood, and tool mark comparison.
(8) Four short lengths of oak branch, taken from the brush-pile found covering the body. To be checked against tool-mark characteristics of the two double-bitted axes.
(9) Pair of dark trousers, belonging to suspect. To be checked for blood.
(10) Pair of blue denim overalls. To be checked for blood.

The laboratory examination and analyses of the material submitted was begun immediately, and by the time it was finally completed, including preparation of all

photographic displays etc, had extended over a period of almost two weeks. The case was one of the first assigned to the writer, and afforded an interesting variety of evidential material and examination.

Very briefly, the following conclusions were drawn as a result of the analysis:

(1) There was no indication of the presence of fibers on the boots, nor of the presence of blood stains.
(2) No conclusion regarding hair. Unknown very similar to both knowns.
(3) No blood was detected on the stained linoleum. The staining material appears to be a mud splatter.
(4) Material submitted as having been taken from the rim of a stone crock was demonstrated not to be blood. Appears to be jam or jelly, or other material of similar nature.
(5) It was not possible to demonstrate the presence of blood on either of the axes submitted. (Benzidine tests were positive on the one marked with an "X", but Teichman was negative)
(6) No blood stains were detected on the blue denim overalls.
(7) Stains of human blood were proved to be present on the pair of dark trousers submitted, but the spots were too small to permit satisfactory grouping tests.
(8) The axe, marked with an "X" was conclusively demonstrated to have made the axe-cuts on two of the four specimens of cut oak branches which had been removed from the grave of the victim, LILLIE LOWER.

The examination, for the most part, was concerned with routine tests for blood (benzidine, Teichman, and precipitin tests, and of microscopic examination of the specimens.

The determination made on the tool-marks on the cut ends of the oak branches was the most time-consuming single operation performed, and at the same time the most interesting and fruitful.

The first step taken in the analysis was a thorough examination of the characteristics of the marks on the oak branches. Each of these branches was about an inch in diameter, the cut ends forming a sharp angle with the axis of the wood sections as would generally result from cutting brush or small limbs with an axe or hatchet. Thus the actual surface on which tool-mark striations appeared were in each case about one inch wide in the middle, by about one and a half inches long. Striations present were plainly visible on two of them, without special lighting, while the other two were much more smooth, and required a more oblique light for examination.

After the preliminary visual examination, each of the sets of marks was photographed by use of the Leitz "Panphot" (a photomicrographic apparatus). The camera on this instrument is a reflex type, which facilitates viewing the image, and permitted a careful placing of the lights, and a uniform lighting in all cases. Oblique lighting was used, a 10 cm. "Milar" lens, and $3\frac{1}{4}$ x $4\frac{1}{4}$ cut film (panatomic-X) utilized. The diameters enlargement on the negatives was approximately four times that of the wood specimens, with a bellows extension of 43 cm.

The negatives were exposed, developed, and printed by contact process.

A careful comparison was then made between the four separate prints. Although the striations on none of them was similarly placed in respect to the axis of the wood specimens represented, it was possible to "match" the lines on two of these different prints. This not only demonstrated a consistency within the striations produced by the original tool used, but provided a larger area of adjacent markings than could have been observed on any

one piece of evidence wood, thus facilitating further comparisons.

Following this, attempts were made to reproduce the tool marks, with each of the blades of the two-bitted axes submitted. Efforts were first directed toward reproducing these lines in a wax medium. This, however, involved some difficulty, especially in regard to lighting, etc. and the attempt was soon abandoned. It was felt that a satisfactory reproduction would most likely be obtained by actually using the tool as it would have been in cutting the brush specimens. Accordingly the two axes were taken out where it would be possible to cut brush and limbs for comparison purposes. All together about six or eight specimens were so obtained, representing cuts made by each of the tools. These were marked for identification purposes, and brought back to the laboratory for examination.

The specimens were placed on the stand of the "Panphot", illuminated with oblique lighting, and examined as an image on the ground-glass screen. Comparison with the photographs immediately eliminated a number of them as possibilities.

One particular test cut, however, showed immediately a marked similarity between the striations thereon and those on the two evidence cuts which had previously been matched up. A little adjustment in the lighting and in the bellows extension (the angle at which the blade had struck the wood was somewhat less than when the test cut was made--or else the evidence wood had shrunk slightly--which caused the lines to be spaced farther apart throughout) and a comparison of the image on the ground glass screen with the (inverted* photograph of the evidence cuts, showed identity beyond any doubt.

These lines on the test wood-cut were then photographed, prints made, and the matching photographs prepared for display purposes.

The laboratory was thus able to prove conclusively that one of the axes had cut the branches found covering the body of the victim. Considering the fact that these axes both belonged to WILLIS HALEY, that blood stains were found on his clothing, and the other evidence against the suspect, there was little doubt left as to the identity of the offender. Inasmuch as the defendant was of unsound mind, he was not tried for the crime, but rather was returned to a sanitarium.

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Our front cover illustration of this month shows one of matching lines obtained in the laboratory between the evidence and test wood-cuts. The illustration shows matching lines which appear over a diameter of approximately three-fourths of an inch on the original wood specimens.

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* In comparing positive prints with the image on the ground glass screen of a reflex camera, it is necessary to either invert the positive print, or else to have printed it in reverse to begin with. The latter is the better procedure unless all striations are clear-cut, and continue from one end of the mark to the other.

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CRITERIA OF FIREARMS IDENTIFICATION

Foreword by the Editor:

The brief article immediately following this foreword, was submitted to us by an interested reader in the hope that, upon publication, it would elicit a response from other Police Laboratory Technicians. The author of the material has requested that it be printed anonymously, inasmuch as a question raised about so well established an identification procedure as firearms examinations is likely to result in considerable criticism.

In publishing comments of this type, we wish to make clear the fact that the views are those of the individual writers, and not of the publishing laboratory.

This particular contribution comes from a Police Laboratory Technician who has had a number of years experience in the analysis of physical evidence, and who holds a position of responsibility in one of our State Police Organizations.

In this article, he raises a question regarding the reliability, as a science, of bullet identifications.

All of us who have made bullet comparisons are convinced that in certain instances "matches" are obtained of such quality as to prove beyond all doubt that the known and unknown specimens were fired from the same gun.

Yet it must be admitted that in some instances there is room for doubt. The area available for matching purposes may be very small--the total number of lines appearing may be few-the bullet may have been badly damaged etc.--these and other factors may make identification or comparison difficult and indefinite.

What criterea are we to follow in making a decision

in such instances?

Should we set up an arbitrary "minimum of fourteen points" and, using this as a sort of scale, draw our conclusions therefrom?

Should we attempt to set up a "probability scale" of some sort, which would be used in such instances? If so, how can this be done? Can bullet identifications be regarded as an exact science--or should it be regarded as opinion testimony:

* * *

Our author, in effect, raises these questions. Readers are invited to offer comment on the article.

THE CRITERIA OF FIREARMS IDENTIFICATION

During the passage of a bullet through a rifled barrel, two types of markings are drawn on its surface; class markings, such as the diameter of the bore, the width and depth of the lands and grooves, and the angle of the rifling. In addition, striations of varying size and distribution are present in each land and groove which represent a composite picture of the tool marks of the barrel plus accidental markings due to erosion, debris and mechanical alteration of the barrel. The comparison of such markings on an evidence bullet with those on a test bullet fired from the weapon in question forms the basis of an opinion as to whether the former was fired from the given firearm.

Where major differences exist between the class markings of two bullets, one is able to definitely state that a given bullet did not come from a given firearm.

Where two bullets have the same general class characteristics, the problem becomes one of determining

whether or not sufficient identity of the bullet markings is present to warrant a given opinion. It is apparent to firearms examiners that determination of the class characteristics may be subject to some error, and that such factors as differences in bullet diameter, bullet alloy, bullet velocity, angle of engagement in the rifling, foreign matter in the barrel, etc., results in the observation that no two bullets fired from the same barrel have absolutely identical markings. Firearms examiners are also aware that occasionally, interesting similarity exists between the markings of two bullets fired from different weapons. Distortion of the evidence bullet further complicates the problem.

It would seem desirable for examiners of firearms to attempt some standardization of criteria as to what constitutes an "acceptable comparison", considering the bullet as a whole. We believe that the usual mathematical treatment of the probability of the coincidence of a given number of defects should be modified to include the coincidence of those defects from bullets of different origin. This can be accomplished only by research, not by philosophy.

What is to be considered the probative value of firearms identification (based on the bullet)? Is it to be regarded, in those cases where comparison is possible, as "positive" evidence in the sense that the bullet was fired from a given weapon and no other, or is it to be regarded as "opinion" evidence, its weight to be dependent upon the individual examiner?

It is the present opinion of the writer that firearms identification is not an exact science, but should be regarded as "probable" or "opinion" evidence; that it should be presented to the jury as such, with the weight of the evidence to be determined by them in view of the other available evidence of the case; admitting that in spite of theoretical objections as to the validity of the methods of examination, much merit does exist, as evi-

denced by the number of successful comparisons which have been made, and verified by other investigative results.

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SUGGESTION FOR COLLECTING MICRO SAMPLES

In the Analytical Edition of "Industrial and Engineering Chemistry" July, 1943, Volume 15, No. 7 appears an article entitled "Identification of Rust on Iron and Steel" by Ralph O. Clark. The article explains in detail a method apparently developed by Mr. Clark, which he uses to collect minute sample of rust subsequent to analysis of lubricated ferrous alloys. The procedure consists of applying fixed, unexposed glossy photographic paper to the surface from which the sample is to be removed. The emulsion is placed in contact with the specimen and the back of the paper moistened. The paper is then drawn away from the specimen, after approximately 30 seconds, with the minute piece of evidence adhering to the moistened gelatin.

After a careful consideration of the article it was thought that this procedure might be adapted to laboratory examinations wherein it is necessary to obtain minute particles of rust, blood, or similar deposits which sometimes cannot be obtained by the usual method.

Reference: "Identification of Rust on Iron and Steel" Ralph O. Clark, "Industrial and Engineering Chemistry", Analytical Edition, Volume 15; No. 7, July, 1943, PP 464-465.

R.F.T.
KCPD

OF INTEREST:

In a recent communication to the Editor, one of our readers brought up a subject which may well be mentioned here in view of our hopes of professionalizing the work of the laboratory men in the Police field. The point in question was one concerning the terminology which should be used to designate these workers.

We, in this publication, have more or less utilized, and even stressed the term "Police Laboratory Technician" not only for convenience, but in an attempt to establish a term which might be more uniformly used.

At the present time there are numerous methods used by the different departments in the designation of their laboratory workers. Some of these men are called, or call themselves, "Criminologists", "Technical Criminologists", "Police Chemists", "Forensic Chemists", "Police Laboratory Technicians", "Scientific Criminal Investigators", etc. Now if we are to seriously attempt to elevate the professional plane of the men performing this work, we should decide upon a standard term, or set of terms, to be applied to them. Further, the term or terms selected must have a real and significant implication as regards the qualifications of those men, and must be restricted by common consent in the applications made of it.

If we are to do this, it is imperative that it be done at the very outset of our organization into a co-operative body.

Our correspondent was particularly in favor of applying the term SCIENTIFIC CRIMINAL INVESTIGATOR to those men who, by reason of the nature of their work, and their qualifications, were classifiable under that term. In suggesting this name, the writer presented a number of excellent reasons for which he believed it more satisfac-

tory than the term "Police Laboratory Technician", the main ones being the fact that the term "technician" is rather indefinite and is applied to laboratory workers in a great number of fields; that it does not particularly place these men in a class distinct and separate from these other technicians; that it does not necessarily imply any particular ability or skill in the handling of evidential material beyond the most commonplace and routine laboratory duties; and that the term lacks to a degree a professional quality or character.

In reply to his suggestions, the Editor defended the use of the term "Police Laboratory Technician" for various reasons which need not be brought out here. Yet at the same time, it must be admitted that there are arguments both for and against the use of any and all of these terms.

We should greatly appreciate a response from other men in the field as regards this subject. In fact it would be most worth while if we could, as a result of comments made, take the initial steps toward setting up a standard classification system in this respect.

Those readers who have previously indicated that they are interested in the establishment of a formal society of these workers are particularly invited to respond.

A number of points would have to be taken into consideration before a satisfactory conclusion could be formulated.

One of the difficulties which would have to be settled, would involve the classification into groups, of the many different workers in the field on the basis of their ability, education, experience, and other qualifications.

If we should choose to apply the term SCIENTIFIC

CRIMINAL INVESTIGATOR to men in this field as a professional title, it is obvious that many Police Laboratory workers would not be correctly classified as such, for while any of them may now call himself by any of the terms previously mentioned, no actual indication is given by those titles of the abilities nor qualifications represented.

Consider the man who, through his own efforts and industry, has advanced from the position of patrolman, to fingerprint "expert", to identification officer. This man, in many departments is the one who is selected to handle the laboratory work when a ballistics microscope, a camera, etc. are purchased by the organization. He may have little or no formal scientific background, and practically no actual qualifications for the work other than an interest in it. What should be his title within the department, or within the field of Police Science?

This same man, or another, may through study and application of scientific principles, eventually become so familiar with the procedures followed in the analysis of criminal evidence as to be definitely capable of handling this type of material through all of the analytical phases necessitated by its nature. Should he not now have a professional title which will distinguish him from others who are just beginning the study of such problems, or who have failed to so apply themselves?

In the actual classification of these men, we might take into consideration such factors as:

(1) Education, (2) Experience, (3) Ability as measured by written tests, (4) Ability as measured by practical analytical performance tests, (5) Personal abilities and aptitudes associated with criminal investigation, but not likely to be detected by ordinary tests--special qualifications.

We might set up a system whereby there would be more

than one classification of workers, and in which there could be "promotion" on the basis of factors such as the above, and in which certificates could be issued by the society to indicate an individual's title or position in the field.

For example, we might have the following:

(1) POLICE LABORATORY ASSISTANT -- any police laboratory worker who, not falling into one of the higher classifications,
    (a) Devotes only part-time to the duties of laboratory work or associated problems.
    (b) Has not spent at least one year of full time work, or the equivalent thereof, in a police laboratory.
    (c) Has not, in that year, had occasion to examine evidence of a number of different types, and successfully made analyses of them.
    (d) Who lacks both of the following requirements:
        (1) Does not have a University degree
        (2) Fails to pass an examination designed to test his qualification for a higher classification.

(2) POLICE LABORATORY TECHNICIAN -- any police laboratory worker who, does not fall into one of the higher classifications, but who has a position in which he
    (a) Devotes full time to the duties of laboratory analytical work, or associated problems;
    (b) Has spent at least one year of full time work in the police laboratory (or its equivalent);

(c) Has had occasion to analyze and examine a number of different types of evidence, and has successfully made determinations necessitated.

(d) And who has

(1) A degree from an accredited University, or

(2) Has passed an examination which permits him to be classified as a Police Laboratory Technician.

(3) SCIENTIFIC CRIMINAL INVESTIGATOR -- any police laboratory worker, who

(a) Has a degree in science from an accredited University;

(b) Has had at least 4 years experience (full time or its equivalent) in police laboratory work and associated problems;

(c) Has analyzed and examined numerous different types of criminal evidence, and maintained a satisfactory record of performance in the laboratory;

(d) Satisfactorily passes written, oral, and practical examinations designed to test his ability; or who

(e) Because of other special qualifications, aptitudes, and recommendations is deemed classifiable as a Scientific Criminal Investigator by his associates, provided that he shall have met at least three (3) of the other four requirements listed above.

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THE EDITOR